

FExNet 2026

Collated SAQs: Toxicology

QUESTION BOOKLET

35 short-answer questions covering the ACEM Fellowship toxicology curriculum, written to ACEM SAQ standards. Sub-questions labelled a) b) c) state the required number of responses. Click in any answer field and type your answer.

35 questions • 482 marks

ACEM-aligned format. Sub-questions labelled a) b) c). Mark allocations indicative; references cited in the Answer Booklet. Question and answer indexes are clickable.

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Click any entry to jump to its question. Marks shown right.

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Question 1 | Carbamazepine Overdose (16 marks)

A 30-year-old, 90 kg woman presents to ED having taken a polypharmacy overdose 2 hours ago, including paracetamol/codeine, carbamazepine and temazepam. She becomes drowsy, tachycardic (120 bpm) and hypotensive (85/43 mmHg). Further history reveals up to 9 g of carbamazepine.

a) List 4 general contraindications to activated charcoal. (4 marks)

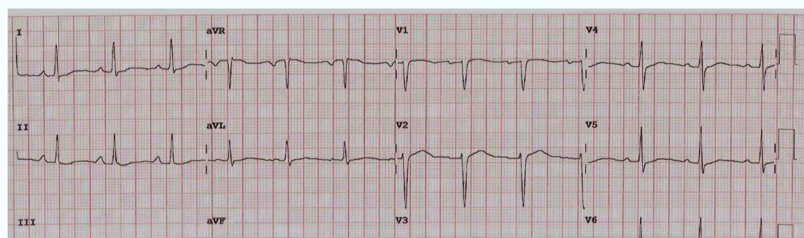
b) List 4 investigations for this patient. (4 marks)

c) List 4 clinical features of significant carbamazepine overdose. (4 marks)

d) List 4 conditions to exclude when this patient has a tonic-clonic seizure. (4 marks)

Question 2 | Citalopram Overdose (14 marks)

A 36-year-old man with schizoaffective disorder presents after a large citalopram overdose. ECG shows QTc 540 ms. He is conscious, GCS 15, BP 110/70.



ECG — 12-lead ECG

a) Analyse the ECG: state rate, rhythm, axis. (3 marks)

b) Name the main ECG abnormality and the cellular mechanism. (2 marks)

c) List 3 other agents that prolong QT. (3 marks)

d) List 6 examination features consistent with significant citalopram poisoning. (6 marks)

Question 3 | Acute Digoxin Overdose (13 marks)

An 18-year-old woman, 65 kg, presents 1 hour after ingesting 200×62.5 mcg digoxin tablets. She has no significant past medical history. BP 110/65, HR 90.

a) Calculate the ingested dose and state the toxicity threshold. (1 mark)

b) List 3 clinical features of ACUTE digoxin toxicity. (3 marks)

c) List 3 relevant investigations. (3 marks)

d) List 5 indications for digoxin-specific Fab fragments. (5 marks)

e) Calculate the dose of digoxin-specific Fab for this patient. (1 mark)

Question 4 | Diltiazem (CCB) Overdose (16 marks)

A 60-year-old man presents 5 hours after ingesting 25 × diltiazem XR 180 mg tablets (4.5 g elemental). He is alert. HR 60, BP 120/67, BSL 6.4. He is admitted for observation.

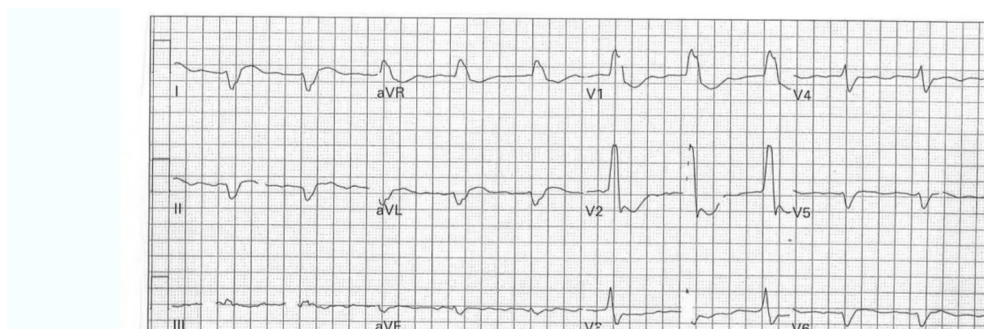
a) List 4 factors associated with significant CCB toxicity. (4 marks)

b) List 4 clinical features of significant CCB toxicity. (4 marks)

c) List 8 step-wise management priorities for the deteriorating patient (BP 87/40, HR 40, SpO₂ 93% RA, GCS 15). (8 marks)

Question 5 | Chronic Digoxin Toxicity (13 marks)

An 83-year-old man with AF and CCF presents with 2 weeks of lethargy, anorexia and dehydration. ECG shows AF with slow ventricular response (40 bpm) and 'reverse-tick' ST changes. Bloods: K^+ 6.4, Cr 200, digoxin 3.0 nmol/L. BP drops to 100/SBP, HR 30.



ECG — 12-lead ECG

a) List 3 ECG features. (3 marks)

b) List 3 possible causes of these ECG abnormalities. (3 marks)

c) List 5 treatment steps. (5 marks)

d) Briefly explain the controversy around IV calcium in this setting. (2 marks)

Question 6 | Eucalyptus Oil — Paediatric Ingestion (12 marks)

A 4-year-old girl presents to ED 30 minutes after being found beside an empty 100% eucalyptus oil vaporiser bottle. Vital signs: HR 120, BP 98/60, RR 26, SpO₂ 94% RA, T 36.1°C. She is drowsy.

a) List 3 sequelae of eucalyptus oil poisoning. (3 marks)

b) List 4 priorities in acute management. (4 marks)

c) List 5 components of a general toxicology risk assessment. (5 marks)

Question 7 | GHB Overdose (12 marks)

A 14-year-old male presents 1 hour after ingesting GHB (γ -hydroxybutyrate). No co-ingestants reported. VBG normal. Initially GCS 8 (E2 V2 M4).

a) List 4 important complications of GHB overdose. (4 marks)

b) List 4 indications for intubation. (4 marks)

c) List 4 sequential interventions for the patient (10 h post-ingestion, GCS 14, mobilising towards exit, wishes to leave). (4 marks)

Question 8 | Insulin Overdose (10 marks)

A 25-year-old man with type 1 diabetes presents 30 minutes after a deliberate overdose of his insulin. He is alert; BSL 2.1 mmol/L.

a) List 4 features of your toxicology history. For each state the relevance. (8 marks)

b) List 2 management steps with end-points after he responds to 25 mL 50% dextrose. (2 marks)

Question 9 | Iron Ingestion — Paediatric (Risk Assessment) (12 marks)

A 23-month-old (12 kg) is brought in 30 min after his mother found him next to her iron tablets (ferrous sulfate 325 mg = 65 mg elemental iron each). Three tablets remain from a previously half-full bottle of 100.

a) Complete the table for dose-related risk of iron in paediatric ingestion. (4 marks)

b) Complete the table for 4 investigations and the result indicating significant ingestion. (4 marks)

c) Name 2 methods of decontamination in iron overdose and when to use each. (2 marks)

d) State the chelation therapy used in significant iron toxicity, with dose. (2 marks)

Question 10 | Iron Toxicity — Stages & X-ray (16 marks)

A 2-year-old boy ingested 90 mg/kg elemental iron 1 hour ago. He is currently asymptomatic. AXR shows multiple radio-opaque tablets in the stomach.



AXR — Supine abdominal X-ray

a) Complete the table of dose-related effects. (4 marks)

b) Complete the table of classical stages of iron toxicity. (5 marks)

c) List 2 relevant findings on AXR. (2 marks)

d) State how the X-ray alters management. *(2 marks)*

e) List 3 blood tests with reasoning. *(3 marks)*

Question 11 | Iron Overdose — Adult (14 marks)

A 65-year-old woman has taken a deliberate overdose of iron tablets in a suicide attempt. She presents 2 hours later with vomiting and abdominal pain.

a) List 5 components of the toxicological risk assessment. (5 marks)

b) Complete the table for assessment features of potentially lethal iron ingestion. (6 marks)

c) List 2 decontamination methods for this patient. (2 marks)

d) Name the specific therapy for severe iron toxicity. (1 mark)

Question 12 | Slow-Release Potassium Overdose (14 marks)

A 68-year-old woman presents 2 hours after ingesting 120 × 600 mg slow-release potassium tablets. She is vomiting, GCS 14. VBG: pH 7.32, lactate 5, K⁺ 6.1, creatinine 110. ECG shows peaked T waves.

a) List 4 components of the risk assessment. (4 marks)

b) Name 2 specific toxicological interventions for this ingestion. (2 marks)

c) List 1 advantage and 1 disadvantage of each intervention. (4 marks)

d) List 4 other management priorities. (4 marks)

Question 13 | Local Anaesthetic Systemic Toxicity (Bier's) (12 marks)

A 28-year-old man is having reduction of a fractured radius under Bier's block with 40 mL 0.5% prilocaine. Fifteen minutes in he becomes cyanotic, SpO₂ 85% on supplemental O₂, complaining of dyspnoea.

a) List 3 differential diagnoses for his deterioration. (3 marks)

b) List 2 investigations with justification. (2 marks)

c) List 3 treatment options for the most likely diagnosis. (3 marks)

d) List 4 contraindications to Bier's block. (4 marks)

Question 14 | Paediatric LAST (16 marks)

An 8-year-old boy (30 kg) presents with a midshaft femur fracture. The senior registrar performs a US-guided femoral nerve block using 20 mL of 0.75% ropivacaine. The patient develops severe LAST with seizures and ventricular arrhythmia.

- a)** Calculate the maximum safe dose of ropivacaine for a 30 kg child. (1 mark)

- b)** List 6 clinical features of LAST. (6 marks)

- c)** List 5 treatment options for severe LAST with reason for each. (5 marks)

- d)** List 4 measures to improve safety of nerve blocks. (4 marks)

Question 15 | Chronic Lithium Toxicity (14 marks)

A 50-year-old female with bipolar disorder on long-term lithium presents with confusion and tremor. She has had a recent infection with reduced oral intake. Lithium level 3.1 mmol/L; creatinine 180 μ mol/L.

a) State the volume of distribution of lithium. (1 mark)

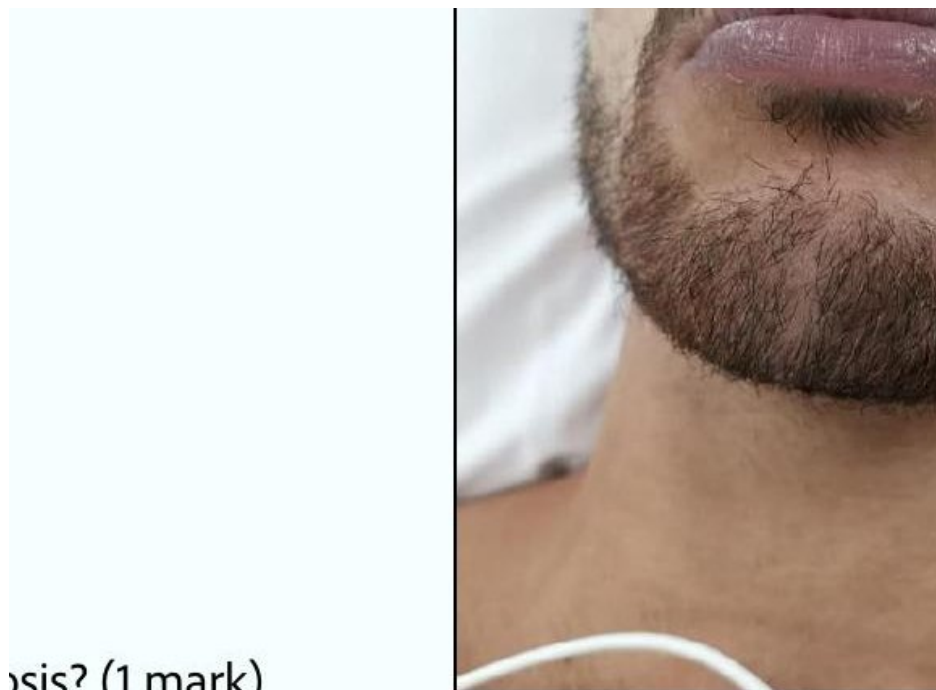
b) List 6 signs / symptoms of chronic lithium toxicity. (6 marks)

c) List 5 principles of management. (5 marks)

d) List 2 major differences between acute and chronic lithium toxicity. (2 marks)

Question 16 | Methaemoglobinaemia (10 marks)

A 21-year-old man at a music festival is brought in complaining of dyspnoea and chest pain. His lips and oral mucosa appear cyanosed (chocolate-brown). T 36.2, P 121, BP 130/88, RR 34, SpO₂ 85% on 10 L O₂.



osis? (1 mark)

PHOTO — Clinical photo — cyanotic lips

a) State the most likely diagnosis. (1 mark)

b) State the pathogenesis. (2 marks)

c) Name 4 agents that can cause methaemoglobinaemia. (4 marks)

d) Outline management priorities. (3 marks)

Question 17 | Methamphetamine — Severe Toxicity (17 marks)

A 28-year-old man with known methamphetamine use is brought in pre-sedated with droperidol. T 38.4, HR 128, BP 158/80, GCS 9 (E2 V2 M5), Na⁺ 116.

a) List 5 possible causes of his presentation. (5 marks)

b) List 5 investigations and reasoning. (5 marks)

c) List 4 steps in immediate management of his tonic-clonic seizure (drug doses). (4 marks)

d) Outline the initial management of hyponatraemia (Na⁺ 116) and 24-h plan. (3 marks)

Question 18 | Paracetamol Overdose — Risk Assessment (12 marks)

A 21-year-old woman is brought to ED after an intentional paracetamol overdose. The exact dose and timing are unclear from history.

a) List 4 key history factors influencing risk assessment. (4 marks)

b) List 3 indications for activated charcoal in this patient. (3 marks)

c) List 5 King's College criteria for liver-transplant referral in paracetamol-induced ALF. (5 marks)

Question 19 | Paediatric Paracetamol — Liquid (12 marks)

A 3-year-old boy (14 kg) is brought in by his mother 30 minutes after she found him with an empty 200 mL bottle of paracetamol liquid containing 10 g total (originally three-quarters full = 7.5 g).

a) State your approach to decontamination. (1 mark)

b) State the threshold paracetamol dose (mg/kg) at which a level should be measured. (1 mark)

c) When (post-ingestion) is the paracetamol level checked? (1 mark)

d) List 4 medications that may be life-threatening if a small child ingests 1–2 tablets ('one-pill killers'). (4 marks)

e) List 5 immediate steps if NAC infusion is followed by anaphylactoid reaction with flushing and wheeze. (5 marks)

Question 20 | Slow-Release Paracetamol Overdose (10 marks)

A 30-year-old man presents 4 hours after intentional overdose of slow-release paracetamol (Panadol Osteo). His 4-h paracetamol level is plotted on the nomogram and is above the treatment line.

- a)** List 2 specific indications for activated charcoal in SR paracetamol. (2 marks)

- b)** List 3 criteria for cessation of NAC. (3 marks)

- c)** List 5 King's College criteria for liver transplant referral. (5 marks)

Question 21 | Polypharmacy Overdose — Activated Charcoal (19 marks)

A 30-year-old (90 kg) woman presents having taken Panadeine Forte, carbamazepine and temazepam. She is stable initially. Subsequently she becomes drowsy, tachycardic (120 bpm) and hypotensive (85/43 mmHg). Carbamazepine ingested = 9 g.

a) State the dose of activated charcoal you would administer. (1 mark)

b) List 5 general contraindications to activated charcoal. (5 marks)

c) List 4 investigations. (4 marks)

d) List 5 clinical features of significant carbamazepine toxicity. (5 marks)

e) List 4 differential causes for tonic-clonic seizure in this context. (4 marks)

Question 22 | Polypharmacy + Propranolol Overdose (16 marks)

A 54-year-old woman presents with apparent alcohol intoxication. 2 hours later she is increasingly drowsy: GCS 9, BP 102/64, HR 75. ECG shows wide QRS with right axis deviation. She had access to her partner's propranolol.



ECG — 12-lead ECG

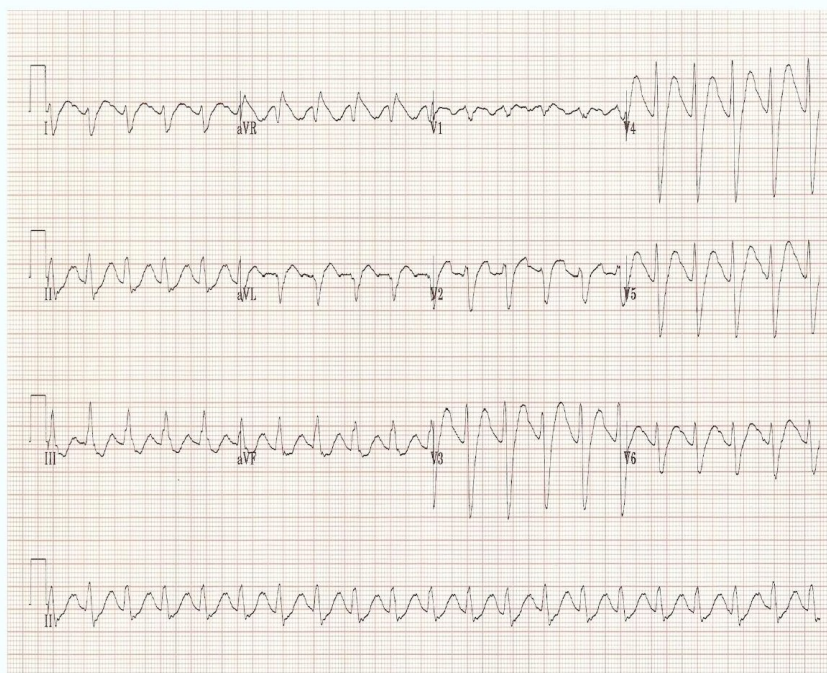
a) List 5 differential diagnoses for her deteriorating consciousness. (5 marks)

b) List 3 relevant ECG features in propranolol toxicity. (3 marks)

c) List 4 immediate life-threats in propranolol overdose. Name a specific treatment for each. (8 marks)

Question 23 | Polypharmacy Overdose — TCA-like ECG (19 marks)

A 34-year-old man is brought to ED after intentional polypharmacy overdose. He is unconscious, GCS 8, RR 8 with obstructed pattern, SpO₂ 90% on room air.



ECG — 12-lead ECG

a) List 3 common conditions and their treatments to address in resuscitation post-overdose. (6 marks)

b) List 3 initial interventions for the low SpO₂. (3 marks)

c) Analyse the ECG (assume wide QRS, terminal R in aVR, long QT). Interpret. (4 marks)

d) List 6 management priorities given GCS 4, BP 75/60, HR 100, SpO₂ 96% on Hudson. (6 marks)

Question 24 | Adolescent Polypharmacy — Anticholinergic / TCA (18 marks)

A 14-year-old (40 kg) presents after taking pill packets from her parents' medicine cabinet (all dispensed yesterday): 20 × Citalopram 20 mg, 20 × Quetiapine 300 mg, 50 × Amitriptyline 25 mg, 24 × Paracetamol/Codeine 500/30 mg. Initial vitals: HR 105, BP 105/60, GCS 13.

a) List 4 key aspects of risk assessment. (4 marks)

b) List 3 key investigations and reasoning. (6 marks)

c) Name the toxidrome to assess for. (1 mark)

d) List 4 clinical features of the anticholinergic toxidrome. (4 marks)

e) List 4 key treatments for deterioration (GCS 9, BP 80/40). (4 marks)

Question 25 | Aeromedical Transfer — Polypharmacy (12 marks)

A 42-year-old woman requires aeromedical retrieval from a rural ED to a tertiary centre 400 km away (75-min flight). She ingested paracetamol 7.5 g, olanzapine 250 mg, diazepam 25 mg 90 minutes ago. Vitals: SpO₂ 92% RA, BP 100/60, HR 110, RR 22, GCS 10.

a) List 4 management decisions for safe transport with justification for each. (8 marks)

b) Complete the table for dose-related olanzapine effects. (4 marks)

Question 26 | Quetiapine Overdose with Hyperkalaemia (12 marks)

A 69-year-old man is found unconscious. He is intubated on arrival. Bloods: Na 136, K 8.3, Cl 101, HCO_3^- 16, Urea 15, Cr 285, Glucose 7.3. Background: quetiapine and diazepam overdose.

a) List 3 abnormalities and likely causes. (6 marks)

b) State the most likely clinical scenario. (2 marks)

c) List 4 management steps for hyperkalaemia with doses. (4 marks)

Question 27 | Salicylate Toxicity (10 marks)

A 42-year-old man presents 4 hours after ingesting an unknown quantity of aspirin. He is anxious, tachypnoeic, diaphoretic and complains of tinnitus.

a) List 5 clinical features of salicylate toxicity. (5 marks)

b) Complete the table for management options. (5 marks)

Question 28 | Sodium Nitrite — Methaemoglobinaemia (10 marks)

A 72-year-old man presents after intentional ingestion of sodium nitrite tablets used for cleaning his dentures. Airway patent, lungs clear. SpO₂ 85% regardless of oxygen titration. Lips appear chocolate-brown.

a) List 3 immediate bedside investigations. (3 marks)

b) State the unifying diagnosis and 1 underlying condition that increases failure of treatment. (2 marks)

c) State the treatment of choice. (1 mark)

d) Name 1 additional therapy. (1 mark)

e) List 3 toxic exposures that can cause this condition. (3 marks)

Question 29 | TCA (Amitriptyline) Overdose (14 marks)

A 23-year-old (60 kg) woman presents 1 hour after ingesting an empty box of 50 × 25 mg amitriptyline. She is GCS 15, BP 120/60, HR 110, BSL 6.6. ECG borderline QRS 100 ms.

a) State your initial risk assessment. (3 marks)

b) Name 1 key investigation and 2 other investigations, with justification. (6 marks)

c) Following a tonic-clonic seizure (now GCS 3, HR 120, BP 90/50), list 5 immediate management priorities with endpoints. (5 marks)

Question 30 | Toxidromes — Hyperthermic Patient (16 marks)

A 32-year-old man is brought in agitated and febrile (40°C) after celebrating with friends post-exam. Background: amitriptyline for migraine prophylaxis. HR 140, BP 163/92, diaphoretic, clonic features in lower limbs.

a) List 5 differential diagnoses, each in a different category. (5 marks)

b) List the 5 components of the Hunter Serotonin Toxicity Criteria. (5 marks)

c) Complete the toxidrome features table for the 6 named toxidromes. (6 marks)

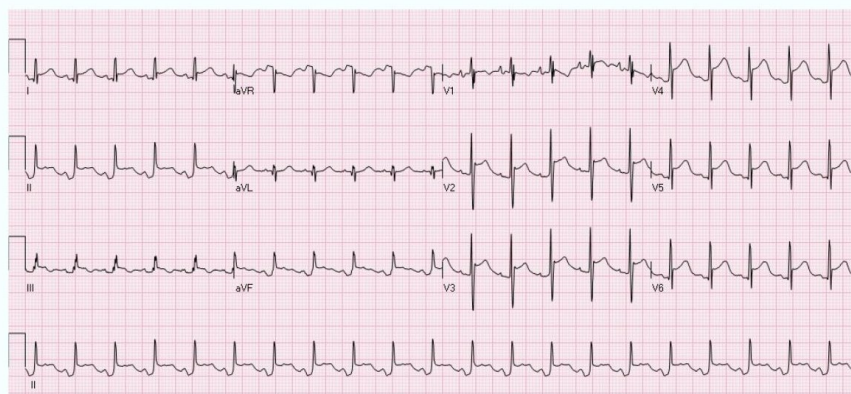
Question 31 | Sympathomimetic — Cocaine / Amphetamine (12 marks)

A 22-year-old man presents after taking 'some pills' at a nightclub. He is diaphoretic, pale, with chest pain. ECG: sinus tachycardia at 120; ST/T-wave abnormalities.

Question 31 (Total 12 Marks)

A 22 year old male is brought to your emergency department following the ingestion of 'some pills' at a nightclub.

He is diaphoretic, pale and complaining of chest pain.



ECG — 12-lead ECG

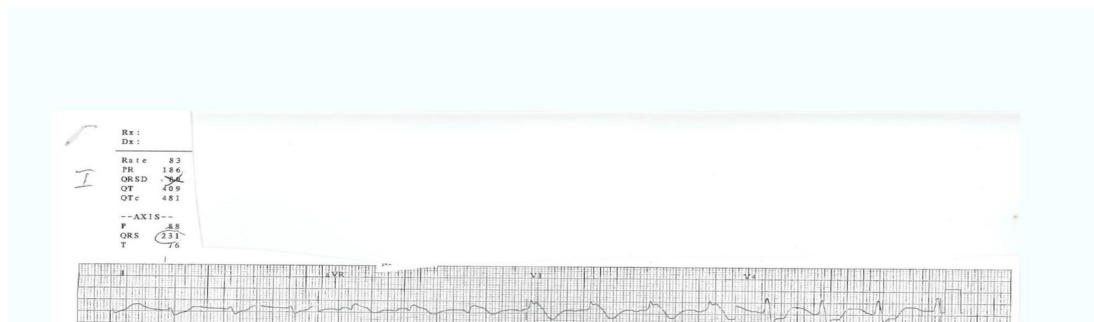
a) List 3 main ECG features. (3 marks)

b) Name 2 likely drug classes and example drug. (4 marks)

c) Outline cardiovascular management. (5 marks)

Question 32 | Unknown Polypharmacy with Wide QRS (14 marks)

A 35-year-old woman is brought to ED unconscious. She had written a suicide note. No empty pill packets found. GCS 8, BP 75/45, SpO₂ 99% on 15 L NRB. ECG shows wide QRS, terminal R wave in aVR, and right axis deviation.



ECG — 12-lead ECG

a) List 3 main ECG abnormalities. (3 marks)

b) Name the drug group most likely responsible. (1 mark)

c) List 5 management steps with drugs, doses and endpoints. (10 marks)

Question 33 | Toxic Alcohol — Ethylene Glycol (18 marks)

A 23-year-old man presents at a rural ED. Family suspects an overdose. BSL normal. VBG: pH 7.34, HCO_3^- 16, BE -6, lactate 9.6, Na 136, Cl 104, K 4.2.

a) State the 2 primary acid-base abnormalities. (2 marks)

b) Calculate the expected CO_2 . (1 mark)

c) List 3 most likely causes of this picture. (3 marks)

d) List 2 features on blood gas that are MOST specific for toxic alcohol. (2 marks)

e) List 4 important investigations with justification. (8 marks)

f) List 3 management priorities (with route and dose). (6 marks)

Question 34 | Toxic Alcohol — Severe Acidosis (17 marks)

A 33-year-old man presents 4 hours after ingestion of an unknown substance. Vitals: HR 105, BP 142/79, RR 30, SpO₂ 94% on 6 L Hudson, GCS 9. ABG: pH 7.02, pCO₂ 20, pO₂ 85, HCO₃⁻ 8, lactate 8.2, glucose 8, urea 24, Cr 210, osmolality 299, Na 142, K 4.0, Cl 106, Ca 1.9, Mg 0.8.

a) Describe the acid-base disturbances. (2 marks)

b) List 3 other abnormalities. State the likely diagnosis with reasoning. (5 marks)

c) List 2 other investigations with rationale. (4 marks)

d) Following a tonic-clonic seizure (5 min), list 6 management steps. (6 marks)

Question 35 | Verapamil SR Overdose (10 marks)

A 32-year-old female presents 6 hours after ingesting 20 × 240 mg SR verapamil. She is vomiting, listless. GCS 14, HR 40, BP 75/40, BSL 12 mmol/L.

a) State your risk assessment. (1 mark)

b) State the pathotoxicological mechanisms. (2 marks)

c) State the significance of BSL 12 mmol/L. (1 mark)

d) List 6 management steps with doses (after deterioration to GCS 9, junctional rhythm 30 bpm). (6 marks)
